

CLAIMS

1. A method of performing power save operation in a wireless local area network (WLAN) by a mobile station while performing voice communications, comprising:

- 5 admitting a reserved traffic stream at an access point, including establishing a reserved buffer at the access point for buffering data corresponding to the reserved traffic stream to be transmitted to the mobile station;
- waking up a WLAN subsystem of the mobile station from a low power state;
- 10 acquiring a WLAN channel between the mobile station and the access point;
- transmitting a polling frame to the access point over the WLAN channel, the polling frame identifying the reserved traffic stream;
- in response to transmitting the polling frame, receiving a response frame
- 15 at the mobile station over the WLAN channel, the response frame being transmitted by the access point and identifying the reserved traffic stream; and
- upon receiving the response frame, setting the WLAN subsystem into the low power state.

- 20 2. A method of performing power save operation as defined by claim 1, further comprising receiving an acknowledgement frame at the mobile station from the access point over the WLAN channel in response to transmitting the polling frame.

3. A method of performing power save operation as defined by claim 1, further comprising transmitting an acknowledgement frame from the mobile station to the access point over the WLAN channel in response to receiving the response frame.

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4. A method of performing power save operation as defined by claim 1, wherein:

receiving the response frame includes receiving a header of the response frame having a MORE_DATA bit set to indicate a second response frame will be

10 transmitted subsequently;

the method further comprising receiving a second response frame at the mobile station.

5. A method of performing power save operation as defined by claim 1, wherein transmitting the polling frame comprises transmitting a null frame.

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6. A method of performing power save operation as defined by claim 5, wherein transmitting the null frame is performed upon expiration of a window timer initiated upon the beginning of a service interval, the service interval defining a real time duration of a voice frame, the window timer having a

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duration less than the service interval.

7. A method of performing power save operation as defined by claim 1,
wherein acquiring the WLAN channel is performed by contending for the WLAN
channel.

- 5 8. A method of performing power save operation as defined by claim 7,
wherein contending for the WLAN channel is performed by carrier sensing.

9. A method of facilitating power save operation by an access point in a wireless local area network (WLAN) by a mobile station while performing voice communications, comprising:

- admitting a reserved traffic stream at the access point, including
- 5 establishing a reserved buffer at the access point for buffering data corresponding to the reserved traffic stream to be transmitted to the mobile station;
- receiving a polling frame at the access point over the WLAN channel from the mobile station, the polling frame identifying the reserved traffic stream;
- checking the reserved buffer for buffered data corresponding to the
- 10 reserved traffic stream to be sent to the mobile station;
- acquiring a WLAN channel between the mobile station and the access point, performed by the access point; and
- transmitting a response frame to the mobile station over the WLAN channel, the response frame being transmitted by the access point and identifying
- 15 the reserved traffic stream.

- 10. A method of facilitating power save operation as defined by claim 9, further comprising transmitting an acknowledgement frame to the mobile station from the access point over the WLAN channel in response to receiving the
- 20 polling frame.

11. A method of facilitating power save operation as defined by claim 9,
further comprising receiving an acknowledgement frame from the mobile station
at the access point over the WLAN channel in response to transmitting the
5 response frame.

12. A method of facilitating power save operation as defined by claim 9,
wherein:
transmitting the response frame includes transmitting a header of the
10 response frame having a MORE_DATA bit set to indicate a second response
frame will be transmitted subsequently;

the method further comprising transmitting a second response frame to
the mobile station, the second response frame belonging to the reserved traffic
stream.
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13. A method of facilitating power save operation as defined by claim 9,
wherein receiving the polling frame comprises receiving a null frame.

14. A method of facilitating power save operation as defined by claim 9,
20 wherein transmitting the response frame comprises transmitting a null frame if
there is no data in the reserved buffer.

15. A method of facilitating power save operation as defined by claim 9, wherein acquiring the WLAN channel is performed by contending for the WLAN channel.

5 16. A method of facilitating power save operation as defined by claim 15, wherein contending for the WLAN channel is performed by carrier sensing.

17. A method of performing power save operation is a wireless local area network (WLAN) having at least one mobile station and at least one access point, the method comprising:

- admitting a reserved traffic stream at the access point, including
- 5 establishing a reserved buffer at the access point for buffering data corresponding to the reserved traffic stream to be transmitted to the mobile station;
- indicating to the access point by the mobile station that the mobile station will use power save mode;
- placing a WLAN subsystem of the mobile station in a low power state;
- 10 waking up the WLAN subsystem of the mobile station from a low power state in response to the occurrence of a service interval timer event, the service interval timer for timing a service interval, the service interval defining a real time duration of a voice frame;
- acquiring a WLAN channel between the mobile station and the access
- 15 point, performed by the mobile station after waking up the WLAN subsystem from the low power state;
- transmitting a polling frame over the WLAN channel from the mobile station upon acquiring the WLAN channel, the polling frame identifying the reserved traffic stream;
- 20 acquiring the WLAN channel, performed by the access point after checking the reserved buffer;
- transmitting a response frame to the mobile station over the WLAN channel, the response frame being transmitted by the access point and identifying the reserved traffic stream; and

upon receiving the response frame at the mobile station, setting the WLAN subsystem into the low power state.

18. A method of performing power save operation as defined by claim
5 17, further comprising transmitting an acknowledgement frame to the mobile station from the access point over the WLAN channel in response to transmitting the polling frame.

19. A method of performing power save operation as defined by claim
10 17, further comprising transmitting an acknowledgement frame from the mobile station to the access point over the WLAN channel in response to receiving the response frame.

20. A method of performing power save operation as defined by claim
15 17, wherein transmitting the polling frame comprises transmitting a null frame.

21. A method of performing power save operation as defined by claim
20, wherein transmitting the null frame is performed upon expiration of a window timer initiated upon the beginning of the service interval, the window timer
20 having a duration less than the service interval.

22. A method of performing power save operation as defined by claim
17, wherein transmitting the polling frame comprises transmitting a frame of

voice data, the voice data provided to the WLAN subsystem by a voice processing subsystem of the mobile station.

23. A method of performing power save operation as defined by claim
- 5 17, wherein transmitting the response frame comprises:
- if the access point has buffered voice data in the reserved buffer, transmitting a voice frame including the buffered voice data; and
 - if the access point has not buffered voice data in the reserved buffer, transmitting a null frame.